

SOFTWARE ENGINEERING

DELIVERABLE-5

Group: Group_4

Group Members:

1. Sadvik Kondadi
2. Sai Chandra Teja Akkala
3. Shashank Kodishala
4. Deepak Reddy Punuru
5. Deepu Gondhi
6. Nithin Reddy Pinikesi
7. Sanjay Ramaswamy
8. Padmaja Soma
9. Thanwish Ram

1. Requirements

16. RAG Implementation for Descriptive Questions

Instructor Role:

- Upload Answer material.

Student Role:

- Submit descriptive answers to questions.

17. Grading System Enhancement — AI-Based Auto-Grading

Instructor Role:

- Approve reference answers.
- Review AI-generated grades and override if needed.

Student Role:

- Submit answers to descriptive questions.
- View scores and feedback based on the similarity score.

18. Advanced Progress Tracking & Analytics

Objective: Provide detailed, progress tracking.

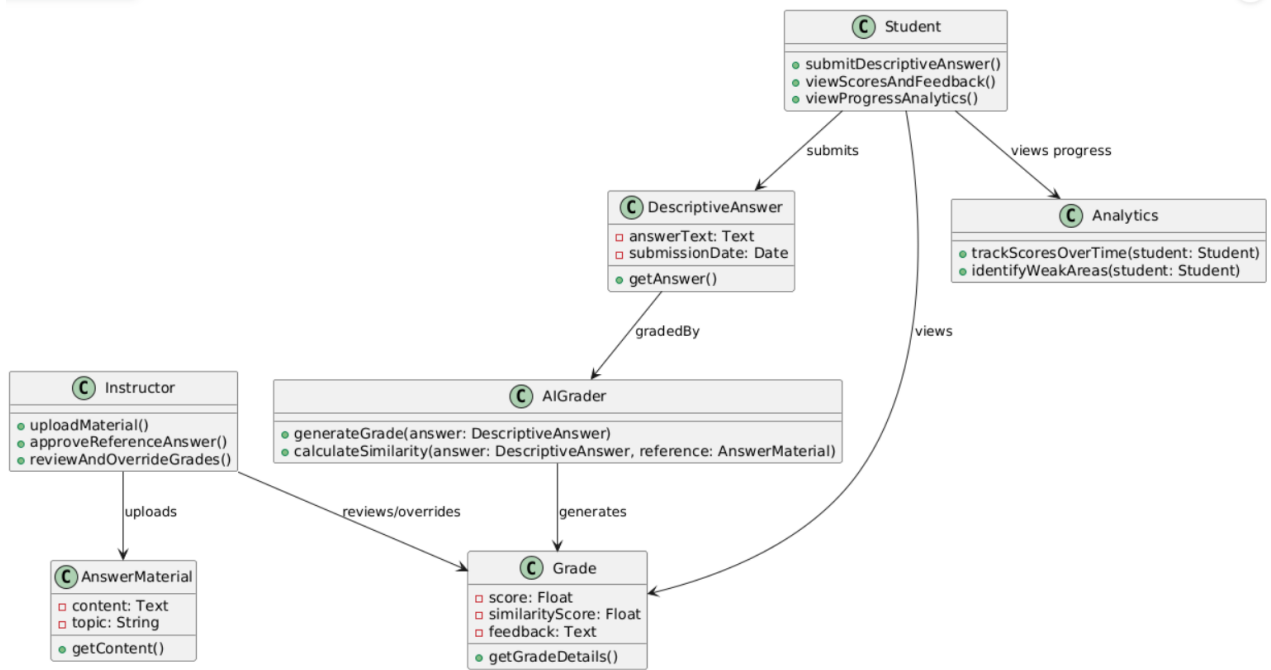
Analytics Features:

Student Analytics:

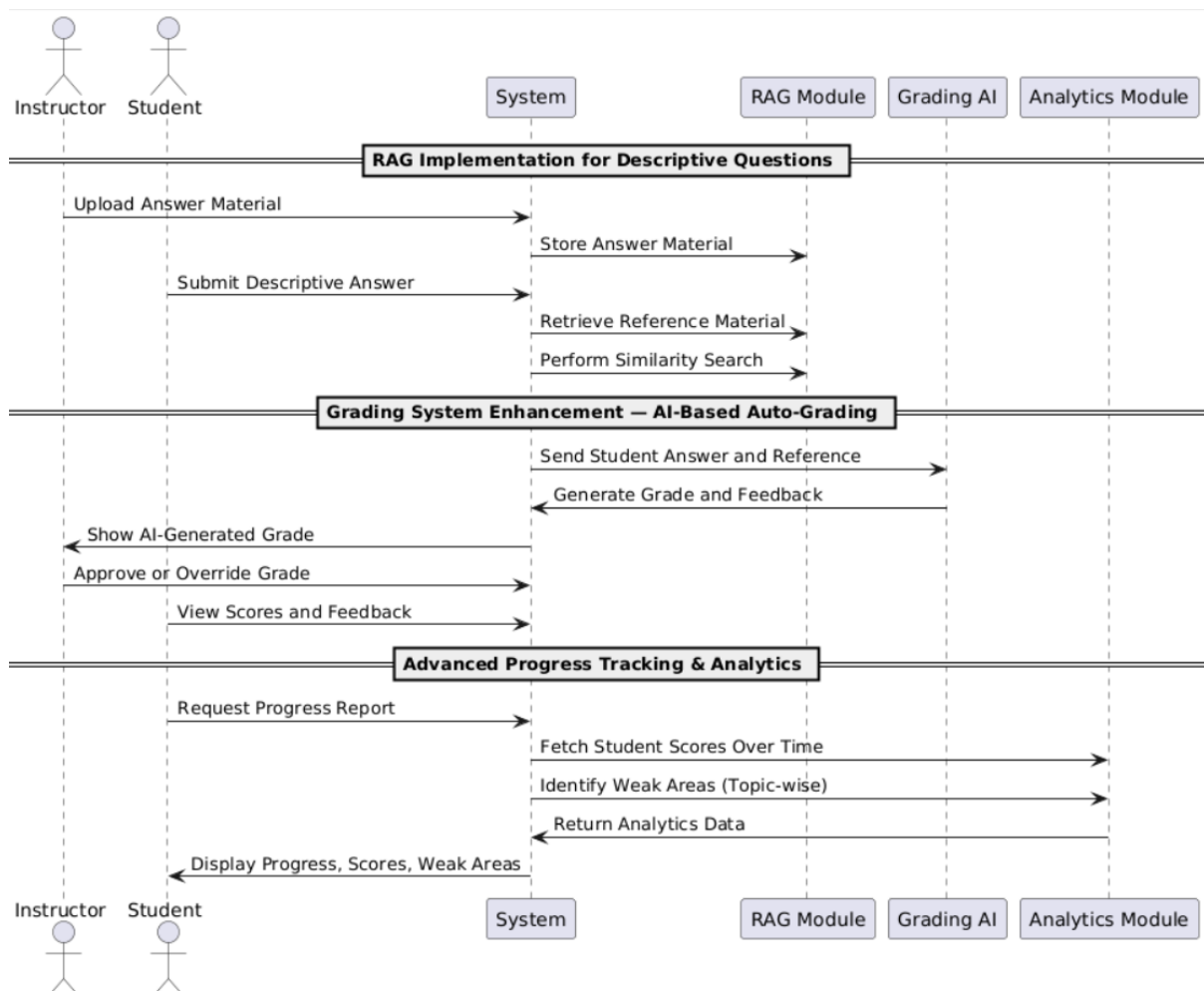
- Scores over time
- Weak areas (based on topic-wise performance)

2. UML Design

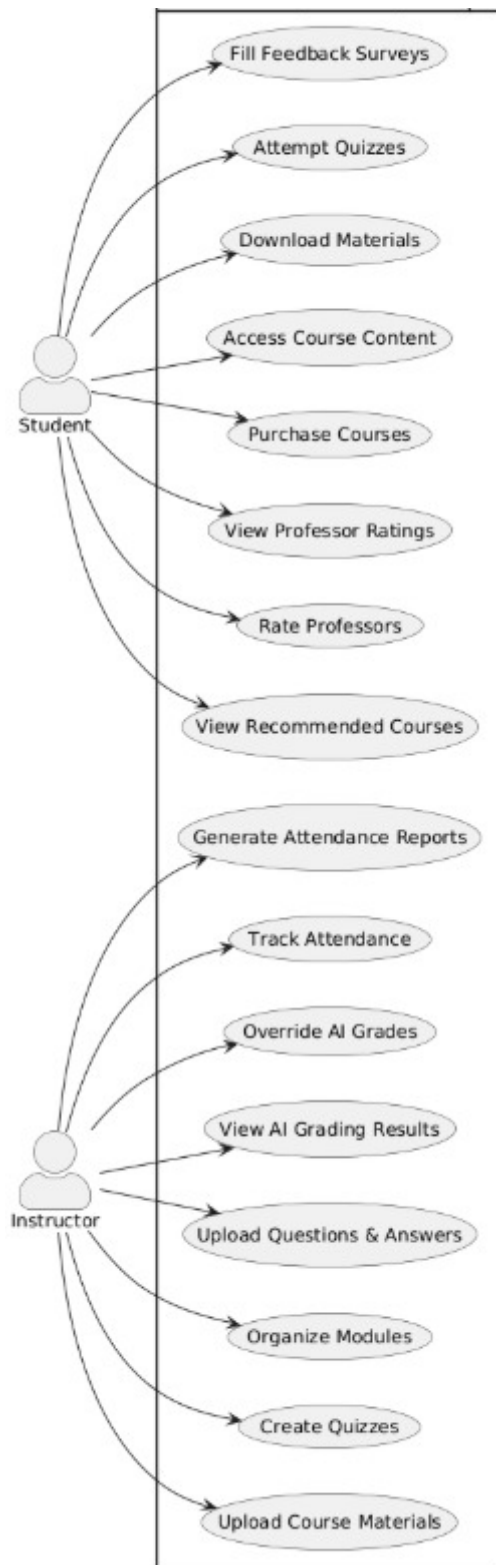
2.1 Class diagram



2.2 Sequence diagram



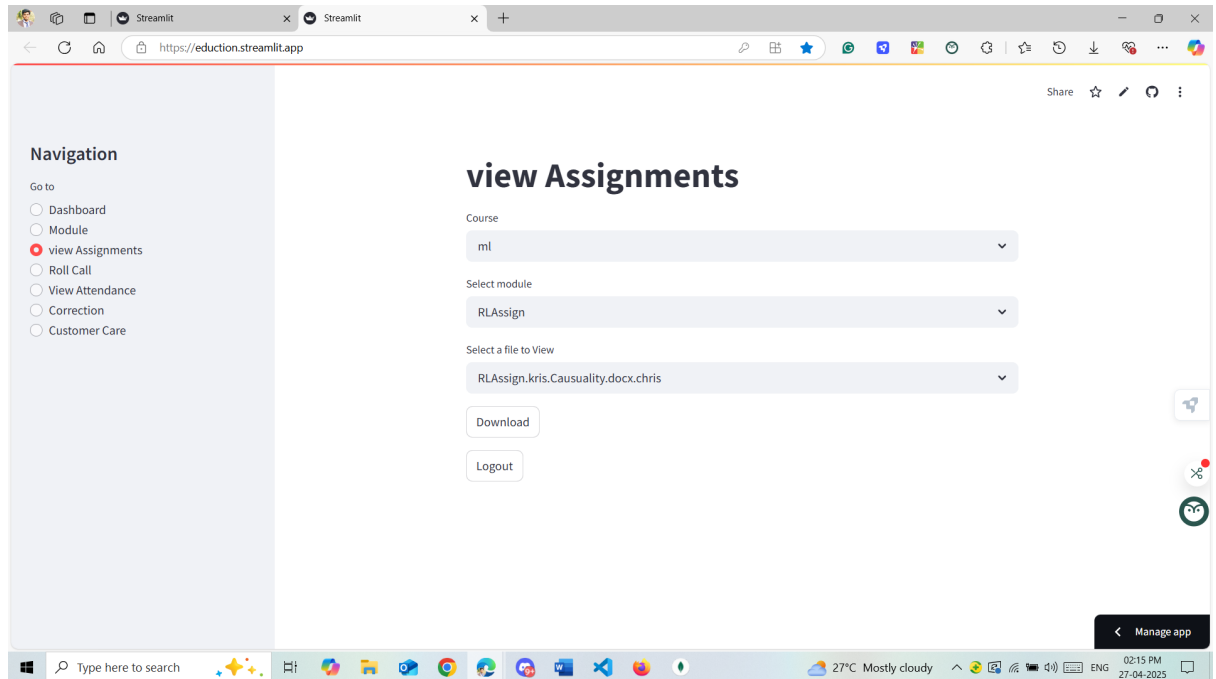
2.3 Use case diagram



3. Test Cases Covered

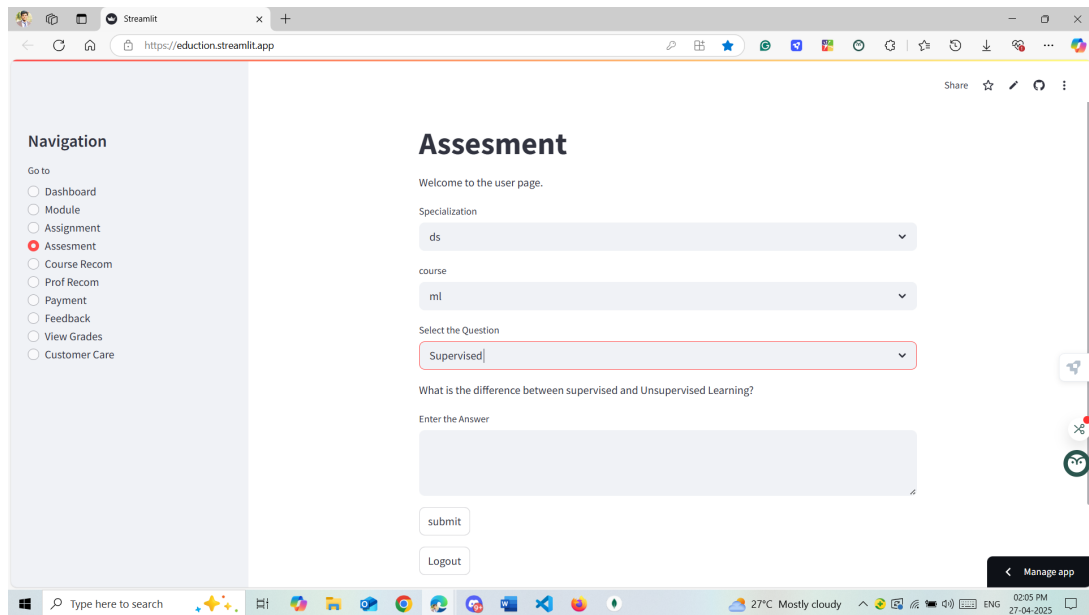
Test Name	Purpose
test_slms_logout	Tests logout functionality, ensuring user is redirected to the login page after clicking logout.
test_slms_rag_vector_generation	Ensures course material text is embedded into a vector successfully.
test_slms_rag_vector_storage_retrieval	Tests whether vectorized data is correctly stored and retrievable from the database.
test_slms_rag_similarity_retrieval	Validates that similar content is retrieved based on cosine similarity of embeddings.
test_slms_auto_grading_cosine_pass	Tests if descriptive answers closely matching the model answer pass the grading threshold.
test_slms_auto_grading_cosine_fail	Ensures completely unrelated answers fail grading due to low similarity score.
test_slms_attendance_recording	Ensures that attendance records for students are inserted and stored correctly in the database.
test_slms_exam_grade_recording	Validates that exam grades are correctly saved and retrievable for a student.
test_slms_feedback_storage	Tests whether student feedback for an instructor is stored correctly and retrievable.
test_slms_student_registration_simulation	Simulates and tests user (student) registration functionality into the system.
test_slms_payment_gateway_simulation	Ensures that payment via card simulation deducts correct balance and records payment.

4. User Manual



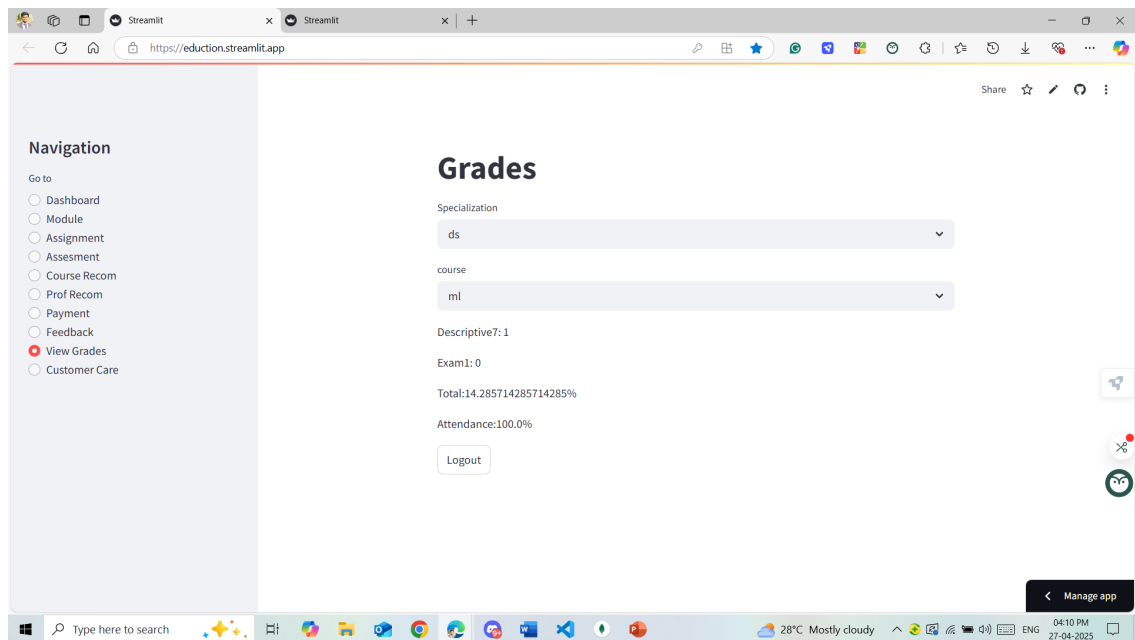
View Assignment

The assignment view in the Student Learning Management System (LMS) is restricted to instructors to ensure secure management of course materials and assessments. This feature allows instructors to have control over the assignment submission, grading, and feedback process. By limiting access, it prevents unauthorized viewing of sensitive academic content, including assignments, rubrics, and student submissions. Instructors can manage the assignment settings, track student progress, and provide tailored feedback, while maintaining confidentiality and academic integrity. Students typically access assignments through a separate student interface, ensuring a clear distinction between administrative and learner roles.



Descriptive Assessment

In the Student Learning Management System (LMS), the "Descriptive Assessment" feature is designed to be accessible exclusively by the instructor. This ensures that only the instructor can review, evaluate, and provide detailed feedback on student performance. The assessment allows the instructor to track individual progress, provide personalized comments, and offer insights into areas for improvement. By restricting access, the system maintains academic integrity, preventing unauthorized access or alteration of assessments. This feature promotes a more structured and secure way for instructors to manage and assess student learning outcomes effectively.



Attendance and Progress Tracking of Assessments

In a student Learning Management System (LMS), attendance and progress tracking for assessments are typically restricted to instructors for privacy and security reasons. This access enables instructors to monitor student performance, track attendance, and identify areas where students may need additional support. By reviewing assessment results, instructors can provide feedback, adjust course materials, and ensure students are meeting learning objectives. Limiting this access ensures that sensitive information is only available to authorized personnel, protecting student privacy while allowing instructors to effectively manage and evaluate student progress throughout the course.

5. Instructions to Compile and Run the Code

- Download app.py code from Github, open in VS code and open terminal.
- The dependencies are installed by using the command 'pip install -r requirements' in the bash terminal.
- Run the program app.py by using the command 'streamlit run app.py' in the bash terminal.
- The default browser will open the Web UI.

6. Feature Summary:

- As we discussed in peer review session about the Implementation of RAG for descriptive answers. We accomplished it in this phase.
- Where professor will already give the answers for the specified questions in the assessment and using similarity search it will grade automatically after students submit answers.
- So we accomplished all the functional requirements mentioned in our project description like RAG implementation, Progress , Roll call and Grading in this phase

7. Reflection:

- The Implementation of Customer Care almost took 5 hours but in the end, it worked successfully.
- The Payment can be improved by using of bank third party to pay by credit Cards.
- The Document Upload has bugs but at last, the PDF view is Implemented.

8. Members Contribution Table:

Member name	Contribution description	Overall Contribution (%)	Note (if applicable)
Sadvik Kondadi	RAG Embeddings	11 %	
Sai Chandra Teja Akkala	RAG Cosine Similarity	11 %	
Shashank Kodishala	RAG Implementation and score similarity	11 %	
Deepak Reddy Punuru	Grading Quiz	11 %	
Deepu Gondhi	View of Grading	11 %	
Nithin Reddy	Progress Correction	11 %	
Padmaja Soma	Progress Tracking Roll Call	11 %	
Thanwish Ram	Progress View	11 %	

Sanjay Ramaswamy	Grading	11 %	
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